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AUTHOR Kaplan, Ira T.; Greenbaum, Howard H.
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ABSTRACT

Three instruments designed to evaluate the performance of work groups in organizations were analyzed with reference to a recently developed comprehensive model of the group problem solving process. Although each instrument measured nine or ten dimensions of group behavior, none of them measured more than seven of the 16 categories of variables defined by the model. Recommendations are that researchers and practitioners keep this model in mind when they design experiments or interventions, to help them avoid overlooking potentially important variables. There appears to be a need for a valid, reliable, and comprehensive instrument to measure the full range of variables that are relevant to group interaction and performance. (One table containing comparisons of models is included.) (Author/KEH)

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NEGLECTED VARIABLES IN THE MEASUREMENT
OF GROUP COMMUNICATION EFFECTIVENESS

Ira T. Kaplan and Howard H. Greenbaum
Hofstra University

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NEGLECTED VARIABLES IN THE MEASUREMENT OF GROUP COMMUNICATION EFFECTIVENESS

Ira T. Kaplan, Hofstra University
Howard H. Greenbaum, Hofstra University

ABSTRACT

Three instruments designed to evaluate the performance of work groups in organizations were analyzed with reference to a comprehensive model of the group problem-solving process. Although each instrument measured nine or ten dimensions of group behavior, none of them measured more than seven of the sixteen categories of variables defined by the model. It was recommended that researchers and practitioners keep this model in mind when they design experiments or interventions, to help them avoid overlooking potentially important variables. There appears to be a need for a valid, reliable, and comprehensive instrument to measure the full range of variables that are relevant to group interaction and performance.

INTRODUCTION

The importance of problem-solving groups in organizations can hardly be overstated. Increasingly, management and decision-making are passing from the single executive to groups, as committees and task forces are formed to make management decisions, to solve problems, and to formulate policy (Wood, Phillips, & Pedersen, 1986). Recently, worker involvement in planning and problem-solving has gained popularity under the title of quality circles. With the proliferation of problem-solving groups in business and industry, it has become increasingly important to develop instruments to measure their effectiveness.

This paper is concerned with the topic of small-group organizational communication. It presents a comparative analysis of three questionnaires designed to evaluate the effectiveness of work groups in organizations. The approach taken was to compare recognized instruments to a comprehensive model of the group problem-solving process developed by Greenbaum, Kaplan, and Metlay (1988). This model includes many elements found in earlier models by

Thibaut and Kelley (1959), Homans (1961), McGrath (1964), Jewell and Reitz (1981), and Tubbs (1984), among others. It has the virtue of accommodating the full range of variables identified in those models within a simple conceptual framework, in terms of which the variables measured by the instruments were classified.

Relating the dimensions measured by each instrument to the group problem-solving model serves three purposes:

1. To summarize the variables measured by each instrument.
2. To facilitate comparison of the instruments.
3. To point out the variables that are not measured.

METHOD

The method employed in this investigation consisted of three major steps: (1) selection of appropriate instruments for analysis, (2) identification of the dimensions of group behavior measured by each instrument, and (3) analysis of these dimensions in relation to the comprehensive model of group problem-solving.

Selection of Instruments

The instruments analyzed in this study were selected from among 180 evaluation instruments initially identified via an extensive review of the small group literature. This number was reduced to about 40 instruments for which reliability and validity data were available. From these were chosen three instruments that met the following criteria: (1) The instrument was developed to measure the interactions and performance of established work groups in organizations, as opposed to ad hoc groups in contrived situations. (2) It measures at least nine dimensions of group behavior. (3) It has been substantiated by the collection of reliability data, and by factor analysis. (4) It possesses some degree of acceptance, as demonstrated by published literature and actual application in industry. (5) It is readily available to potential users.

Identification of Dimensions

The documentation for each instrument was examined for information describing the dimensions that it was designed to measure. In each case, the dimensions had been confirmed by factor analysis in the process of developing the instrument. These dimensions were referred to variously as dimensions, factors, and scales, and we followed the author's usage when describing the dimensions in the Results

and Discussion section, below. Questionnaire items were analyzed to formulate the description of each dimension, and representative items were selected to illustrate that dimension.

Classification of Dimensions

The dimensions were analyzed with reference to a comprehensive model of the group problem-solving process (Greenbaum, Kaplan, & Metlay, 1988). Following the systems approach to small group interaction, this model regards the group as an open system composed of four successive stages: input, process, output, and feedback. Inputs of resources and information from the environment are processed by the system to produce outputs, which are evaluated by the environment, resulting in a feedback of information that influences subsequent inputs and processes to produce different outputs later in time. A unique feature of the present model is that it subdivides each stage into four levels related to (1) the task, (2) the individual, (3) the group, and (4) the organization. Thus, the model provided a framework of 16 categories (four stages by four levels), into which the dimensions measured by the instruments were classified.

RESULTS AND DISCUSSION

The three instruments selected for analysis were the Group Behavior Inventory (Friedlander, 1966), Wilson Learning's Team Interaction Profile (Mullaney, 1986), and the Job Reaction Questionnaire (Honeywell, 1985). All three instruments were designed to evaluate the performance of work groups in organizations. But because of the different settings in which they were developed, they differ considerably in the degree of emphasis that they place on work group meetings. The GBI was developed in a large research and development (R&D) organization. The importance of meetings in that context is reflected in the fact that the GBI concentrates entirely on meetings. The JRQ, on the other hand, was developed in a factory setting to measure aspects of work life that would probably be improved as a result of employee involvement programs. Only one item in the JRQ refers explicitly to meetings. Finally, the TIP was developed to evaluate team performance in a variety of settings, including both R&D and manufacturing. Whereas it is greatly concerned with interactions among work group members, it is only moderately concerned with meetings per se, as shown by the 8 of its 57 items that mention meetings.

Dimensions Measured by the Group Behavior Inventory

The nine dimensions measured by the GBI may be described in the following terms, which are based on the items that compose the factors:

Factor 1, Group Effectiveness, describes effectiveness in solving problems and in formulating policy through a creative, realistic team effort. The sense of this dimension is indicated by the two items most strongly related to it:

The group is an effective problem solving team, and
Group meetings result in creative solutions to problems.

Factor 2, Approach to versus Withdrawal from Leader, indicates the degree to which group members can establish an unconstrained and comfortable relationship with their leader. The two items most related to this dimension are:

Others approach the chairman with ease, and

Others feel at ease when talking with the chairman. The next two most related items are the same except that the word "Others" is replaced by "I."

Factor 3, Mutual Influence, describes groups in which members see themselves and others as having influence with other group members and the leader. The two most related items are:

I (Others) have influence with the chairman,
followed by two items that read,

I (Others) accept influence from other group members.

Factor 4, Personal Involvement and Participation, describes individuals who want, expect, and achieve active participation in group meetings. The two items most related to this dimension are:

I want to actively participate in meetings,
and a fill-in item that reads,

I estimate that I talked ____% of the time during
the last meeting.

Factor 5, Intragroup Trust versus Intragroup Competitiveness, indicates the degree to which the members hold trust and confidence in each other. The two most related items are:

There is a destructive competitiveness among
members of the group, and

Others are reluctant to sacrifice ideas so that the
group may agree.

Factor 6, General Evaluation of Group Meetings, measures a generalized feeling about the meetings of one's group as good, valuable, strong, pleasant, or as bad, worthless, weak, unpleasant.

Factor 7, Submission to versus Rebellion against Leader, describes how the group reacts when disagreements arise. The two most related items are:

I submit to the chairman when disagreements arise,
and

I rebel against the chairman when disagreements arise.

Factor 8, Leader Control, refers to the extent to which the leader initiates and controls the group process, primarily by engaging in one-way, leader-to-group communication. The most related items are:

Most material covered in meetings is introduced by the chairman, and

I estimate that the chairman talked about ____% of the time during the last meeting.

Factor 9, Role and Idea Conformity, describes an emphasis on efficiency that encourages conformity at the expense of creativity. The two most related items are:

Others act the role that is expected of them, and
Divergent ideas are discouraged at meetings.

Dimensions Measured by the Team Interaction Profile

The ten dimensions, in the order that they emerged in factor analysis, are the following:

Dimension 1, Rapid Response, is a measure of group performance that emphasizes speed, as shown by these representative items:

Priorities are rapidly set within our group, and
We focus on the most important or central issues first.

Dimension 2, Shared Responsibility, is a measure of member influence. Typical items are:

Members take an active role in promoting change, and
Members have a say in decisions that affect the group.

Dimension 3, Focus on Task, is defined as keeping meetings focused on results. All the items refer to meetings, as in the following examples:

Members are aware of the purpose of a meeting from the beginning, and
Meetings run smoothly.

Dimension 4, Communication Norms, might better be called Group Member Satisfaction, because all the questions begin with the words:

How satisfied are group members with...
and end with terms such as:
the group's performance, and
the direction the group is headed.

Dimension 5, Future Focus, measures attitudes toward change, as shown by items like:

Our group prefers things the way they were done
in the past, and
Traditional solutions to problems are used even
when they are not appropriate.

Dimension 6, Alignment on Purpose, is characterized by the following items:

Our group shares a common purpose, and
Members demonstrate commitment to the purpose of
our group.

Dimension 7, Participative Leadership, encompasses two factors. One refers to interpersonal relationships, and the other to group goals as contrasted with personal and organizational goals. Two items that loaded on the first factor are:

The group balances concerns for completing tasks
with concerns for maintaining good interpersonal
relationships, and
We recognize when task pressures begin to create
interpersonal problems.

The two items that loaded on the second factor are:

Personal goals are sacrificed to achieve group
goals, and
Group goals are sacrificed to achieve organizational
goals.

Dimension 8, Open Communication, describes how freely the group members communicate with one another, as indicated by the following items:

Group members are open in their communication, and
Members feel free to disagree with fellow employees.

Dimension 9, Satisfaction, refers to personal satisfaction. The four questions that compose this factor begin with the words:

How satisfied are you with ...
and conclude with the expressions:
yourself on the job?
your current job?
the way your group is led?
your group's performance?

The items that compose Dimension 10, Use of Creative Talent, did not load on a factor. Two representative items are:

The unique skills and qualifications of individuals are recognized by the group, and
Unique ways of doing things are readily accepted.

Dimensions of the Job Reaction Questionnaire

Nine scales are defined in the JRQ User's Guide (Honeywell, 1985) as follows. Two illustrative items are given for each scale:

Scale 1, Work Planning and Efficiency--There is little delay, confusion, or waste at work. Work is planned well and problems solved quickly. Representative items are:
We seldom have delays or foul-ups at work, and
Problems here get corrected quickly.

Scale 2, Cooperation among Work Groups--The organization runs smoothly with cooperation between areas, sections, and functions. Two items are:
There is a spirit of cooperation between people with different kinds of jobs in the work area, and
Work groups here cooperate to get the job done.

Scale 3, Management Communication--Management listens to employee problems and opinions. They act on employee suggestions. Two items are:
Meetings to exchange information and ideas are held here pretty often, and
We get a chance to air out our problems here.

Scale 4, Personal Influence--Emphasis on the pronoun "I." I personally feel that I have impact, can bring about change, and influence decision making. Two items are:
When something at work really bothers me, I can usually get some changes made, and
People like me can get changes made at work if we make ourselves heard.

Scale 5, Use of Job Knowledge--Talents, skills, and experience are being used on the job. The employee is learning and being trained. Two items are:
My job gives me a chance to use my talents, and
This department puts my experience to good use.

Scale 6, Task Significance--Employees understand how work relates to a larger context: goals of the work group, people on other jobs, and the eventual use of parts, products, or services. Two items are:
I know how the parts or products I make will be used, and
I know what the goals of my work group are.

Scale 7, Recognition/Interpersonal Feedback-- Quantity, speed, and helpfulness of feedback about work performance. Recognition of positive contributions by supervisors or co-workers. Two items are:

I get a lot of information about how well I'm doing on my job, and
When I do really well, I find out about it right away.

Scale 8, Overall Job Satisfaction, is a single item scale:

Considering everything, I'm satisfied with this job.

Scale 9, Room for Improvement, also consists of a single item:

I think that efficiency and productivity could be improved here.

Relationship of the Dimensions to the Model

Table I relates the 28 dimensions obtained from the three group-behavior instruments to the problem-solving model. The columns of the table headed Input, Process, Output, and Feedback correspond to the four stages of the model. The rows headed Task, Individual, Group, and Organization correspond to the four levels of analysis. Each of the sixteen cells of the table represents a category of variables. For example, the four cells at the Task level refer to Task Input, Task Process, Task Output, and Task Feedback. The acronyms in each cell designate the instruments with one or more dimensions related to that cell. For example, the entry in the Task Process cell indicates that the TIP has a dimension that measures a Task Process variable.

Most of the dimensions of the GBI are concerned with Group Processes, reflecting its emphasis on meetings. Seven of its nine dimensions focus on that one cell of the model, specifically the dimensions named Approach to versus Withdrawal from Leader, Mutual Influence, Personal Involvement and Participation, Intragroup Trust versus Intragroup Competitiveness, Submission to versus Rebellion against Leader, Leader Control, and Role and Idea Conformity. One dimension, Group Effectiveness, measures Task Output, and one, General Evaluation of Group Meetings, measures Individual Output. Thus, the GBI does not assess the Input or Feedback stages, or the Organizational level of the model.

Table I
Cells of the Group Problem-Solving Model
Measured by the Group Behavior Inventory,
the Team Interaction Profile, and
the Job Reaction Questionnaire

Level	Stage			
	Input	Process	Output	Feedback
Task		TIP	GBI TIP JRQ	JRQ
Individual	JRQ		GBI TIP JRQ	
Group	TIP	GBI TIP JRQ	TIP	
Organization	JRQ	JRQ		

Five of the ten dimensions of the TIP are concerned with Group Processes: Shared Responsibility, Future Focus, Participative Leadership, Open Communication, and Use of Creative Talent. Three dimensions relate to the Output stage: Focus on Task measures Task Output, Satisfaction is an Individual Output, and Communication Norms is a Group Output. Rapid Response describes a Task Process, and Alignment on Purpose is a Group Input. None of the TIP dimensions address the Feedback stage or the Organizational level of the model.

The JRQ has the broadest and most uniform coverage of variables. It measures seven of the model's sixteen cells and does not concentrate on any of them. Every stage and level is addressed by at least one dimension of the JRQ. On the Task level, Output is measured by Work Planning and Efficiency, and by Room for Improvement. On the Individual level, Input is measured by Task Significance, and Output is measured by Personal Influence and Overall Job Satisfaction.

On the Group level, Process is measured by Management Communication. Finally, on the Organizational level, Input is measured by Use of Job Knowledge, and Process is measured by Cooperation among Work Groups.

Table I shows that three cells, or categories of variables, are assessed by all three instruments: Task Output, Individual Output, and Group Process. Note that the GBI measures only those cells. Three more cells are assessed by the TIP, which measures Task Process, Group Input, and Group Output. An additional four cells are assessed by the JRQ, which measures Task Feedback, Individual Input, Organizational Input, and Organizational Process.

In addition to summarizing and comparing the three instruments, Table I indicates their individual and combined limitations. The most comprehensive instrument, the JRQ, measures seven cells of the model, leaving nine cells unaccounted for. All three instruments together measure ten cells, which still leaves six categories of variables potentially relevant to group performance, that are not measured by any of these three carefully developed, multidimensional instruments.

CONCLUSIONS AND RECOMMENDATIONS

1. Three instruments designed to evaluate the performance of work groups in organizations were found to differ in their emphasis on meetings, and relatedly in the number of dimensions that measured group interaction processes.
2. In spite of their differences, all three instruments measured task output (performance), individual output (satisfaction), and group process (interaction).
3. Although each instrument measured nine or ten dimensions of group behavior, none of them measured more than seven of the sixteen categories of variables defined by a comprehensive model of the group problem-solving process.
4. It is recommended that researchers and practitioners keep the Group Problem-Solving Model in mind when they design experiments or interventions, to help them avoid overlooking potentially important variables.
5. There appears to be a need for a valid, reliable, and comprehensive instrument to measure the full range of variables that are relevant to group interaction and performance.

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